FIG 1

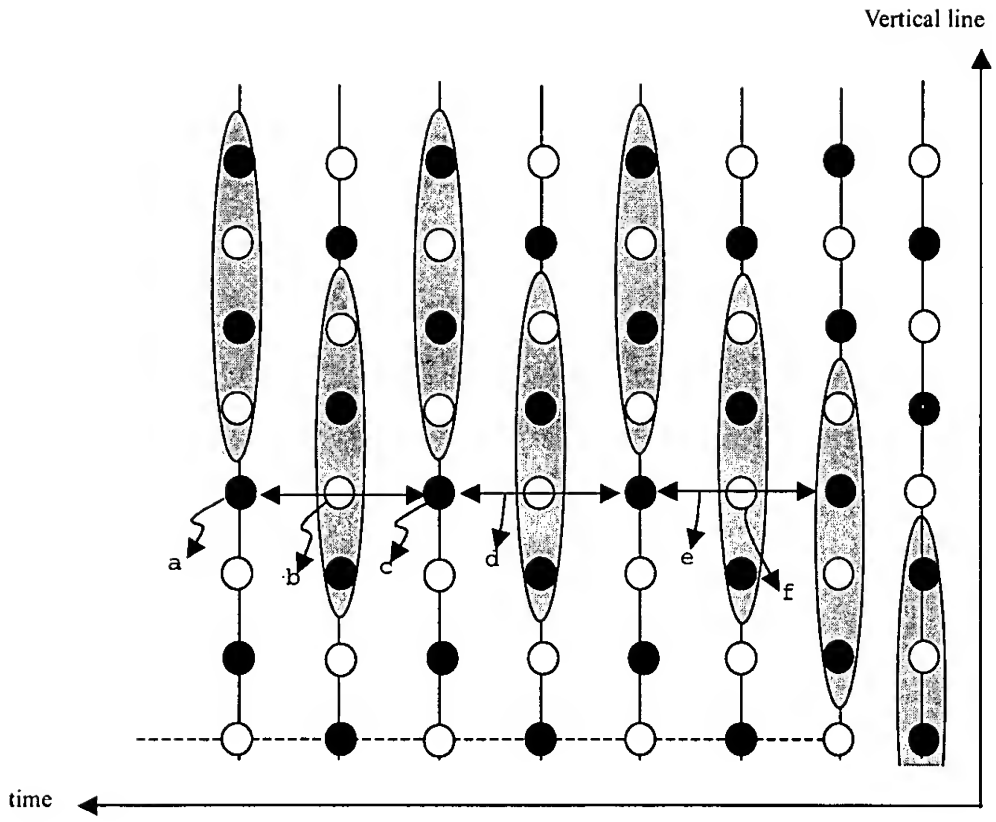


FIG 2

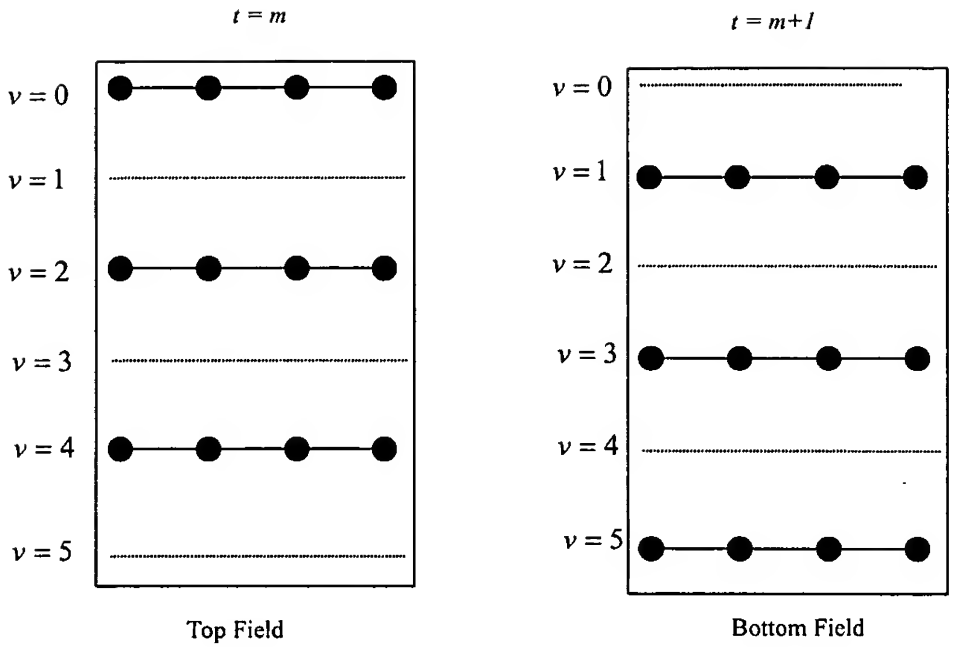


FIG 3

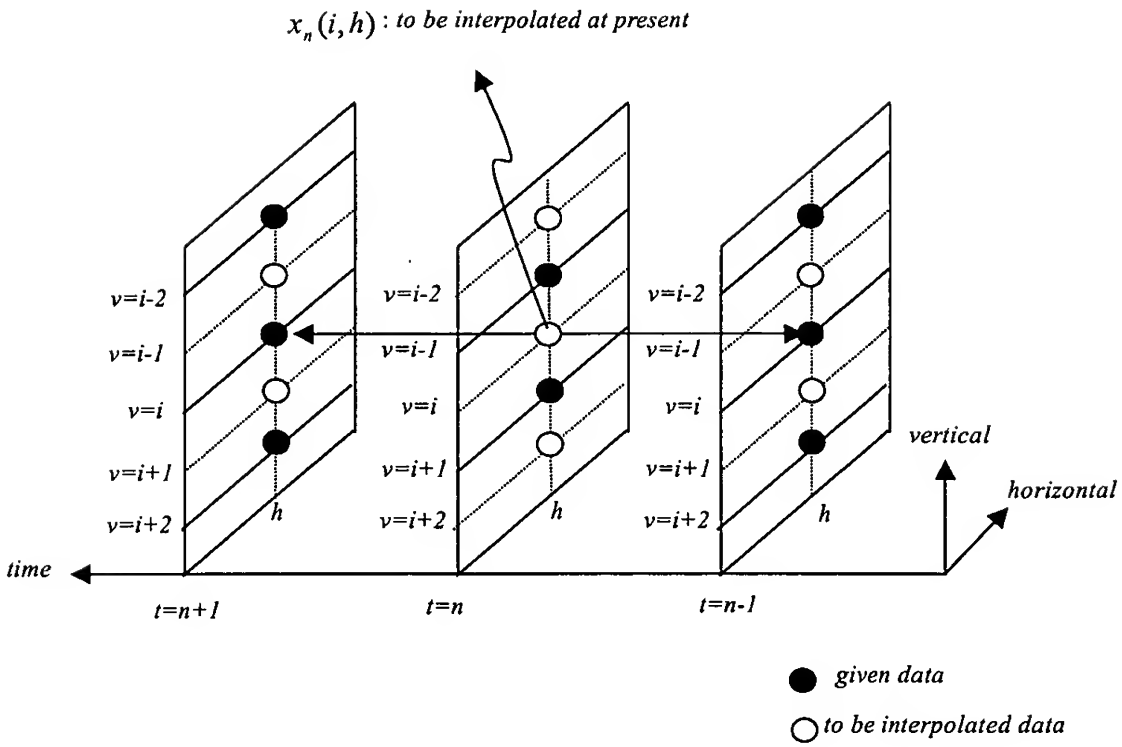

$x_n(i,h)$: to be interpolated at present
v=i-2
v=i-1
v=i
v=i+1
v=i+2
h
time
t=n+1
t=n
t=n-1
vertical
horizontal
given data
to be interpolated data

FIG 4

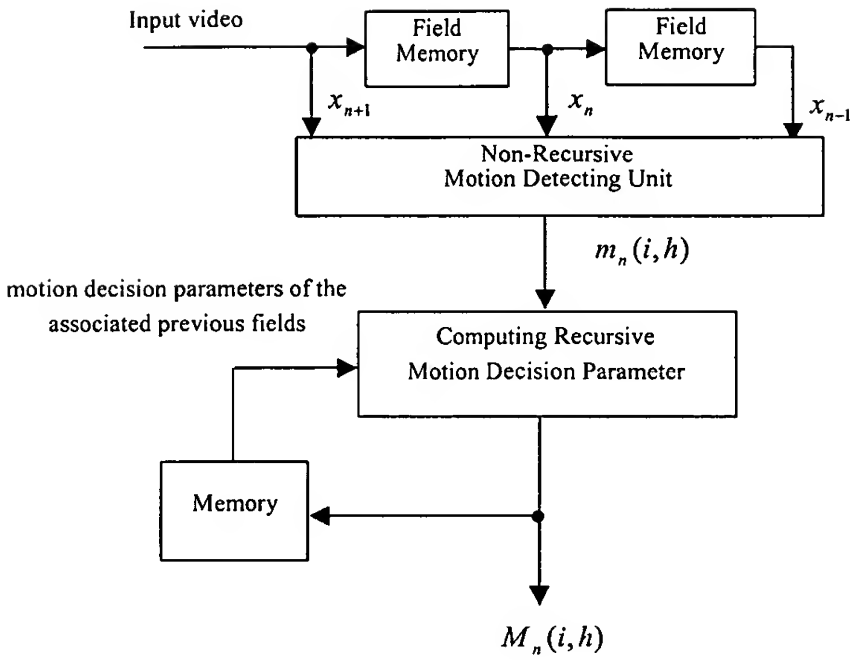

Input video
Field Memory
Field Memory
x_{n+1}
x_n
x_{n-1}
Non-Recursive Motion Detecting Unit
$m_n(i,h)$
motion decision parameters of the associated previous fields
Computing Recursive Motion Decision Parameter
Memory
$M_n(i,h)$

FIG 5

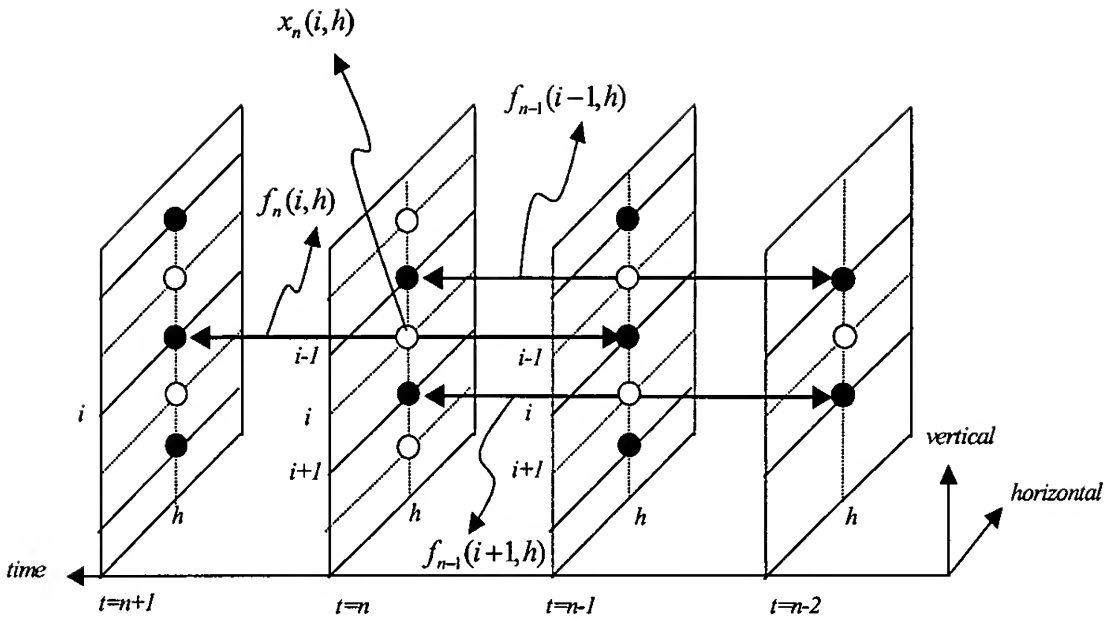

$x_n(i,h)$
$f_{n-1}(i-1,h)$
$f_n(i,h)$
i-1
i
i+1
h
$f_{n-1}(i+1,h)$
vertical
horizontal
time
t=n+1
t=n
t=n-1
t=n-2

FIG 6

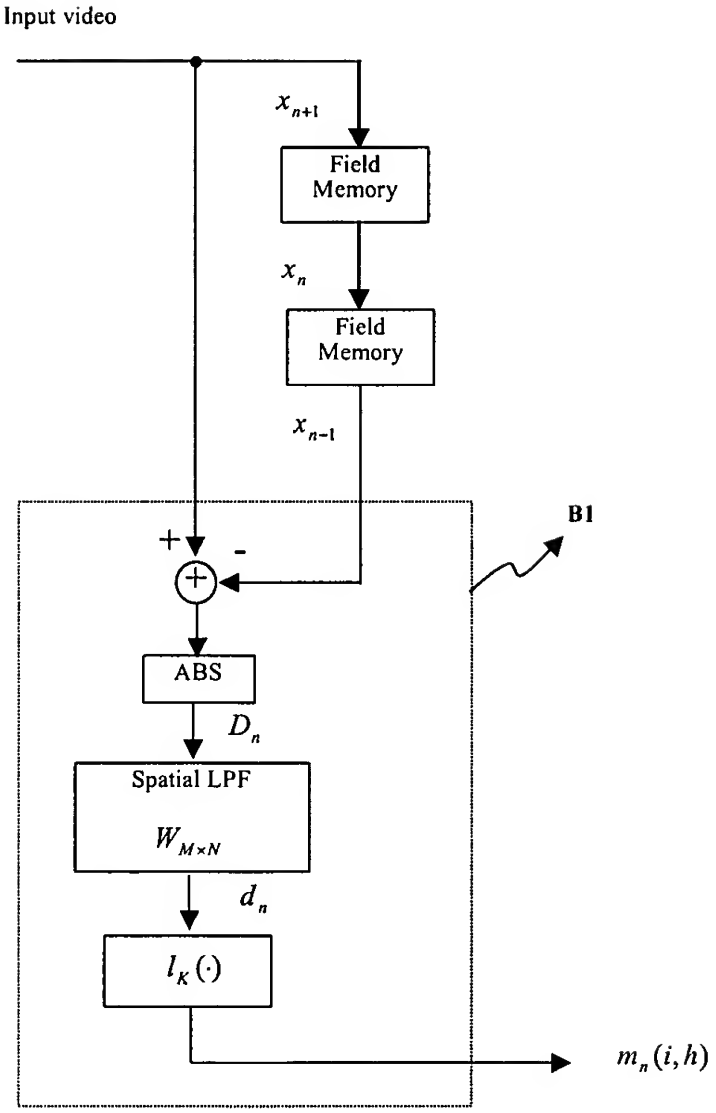

Input video
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
B1
+
-
ABS
D_n
Spatial LPF
$W_{M\times N}$
d_n
$l_K(\cdot)$
$m_n(i,h)$

FIG 7

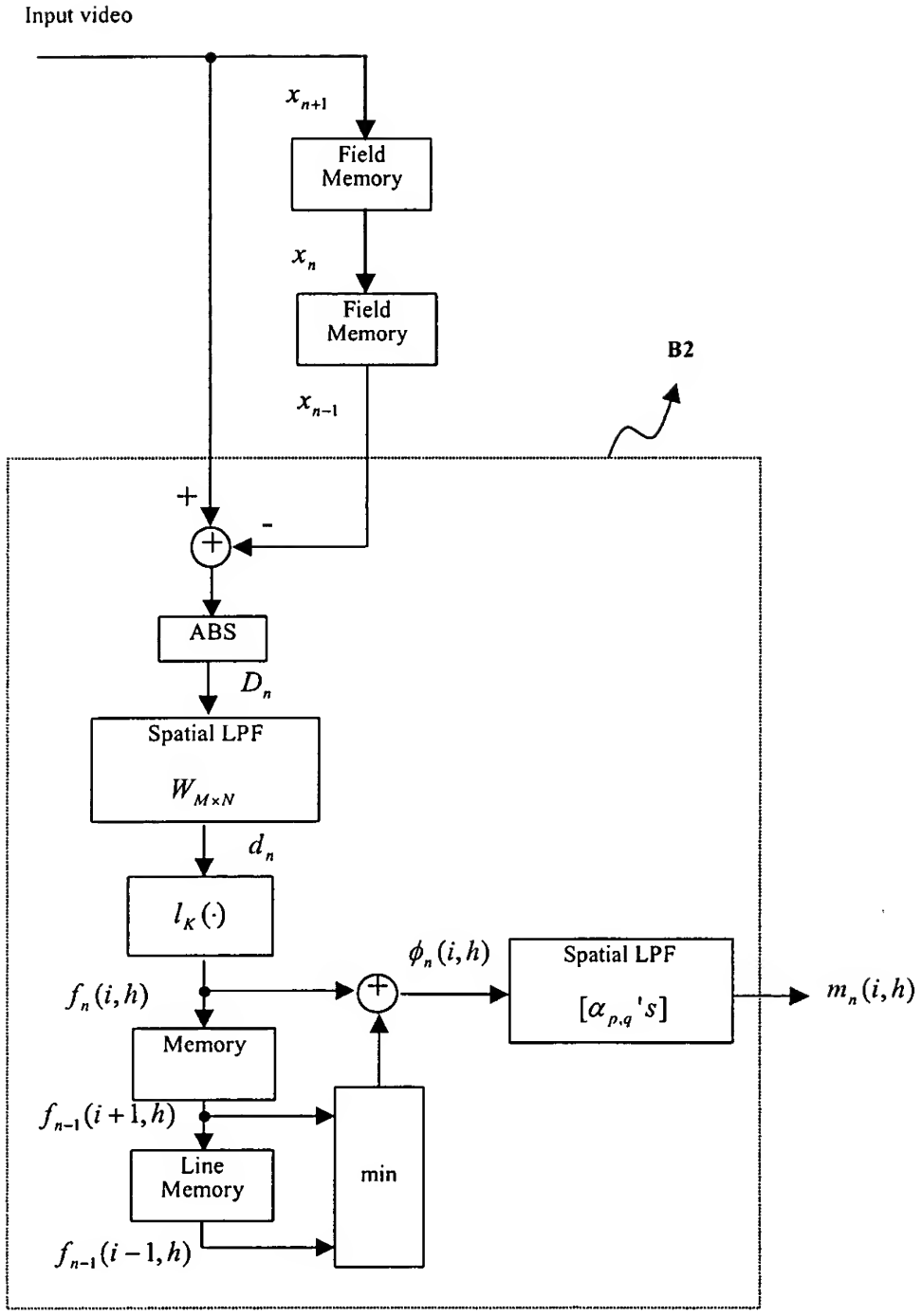

Input video
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
B2
+
-
ABS
D_n
Spatial LPF
$W_{M\times N}$
d_n
$l_K(\cdot)$
$\phi_n(i,h)$
Spatial LPF
$[\alpha_{p,q}'s]$
$m_n(i,h)$
$f_n(i,h)$
Memory
$f_{n-1}(i+1,h)$
Line Memory
min
$f_{n-1}(i-1,h)$

FIG 8

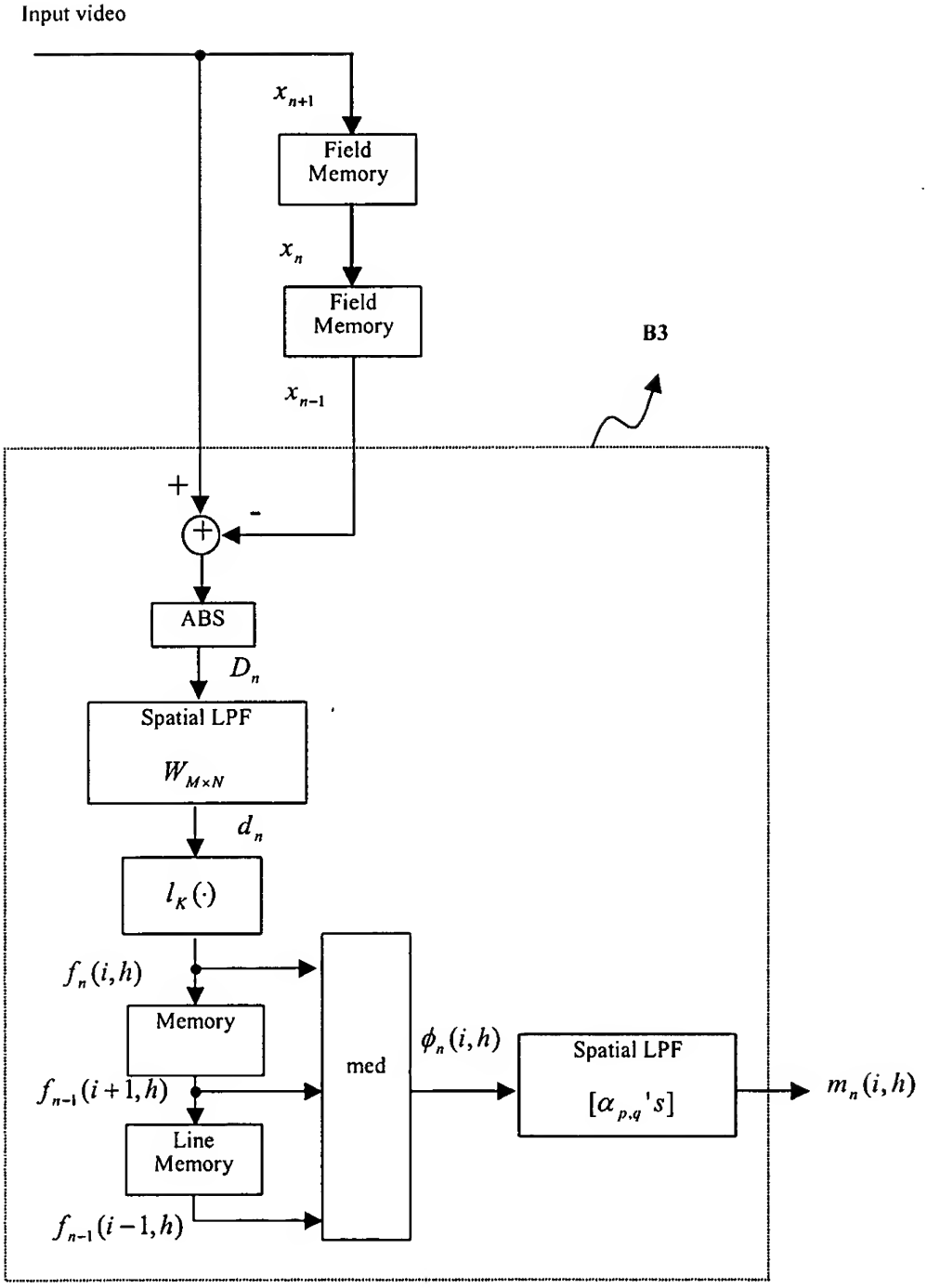

Input video
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
B3
+
-
ABS
D_n
Spatial LPF
$W_{M\times N}$
d_n
$l_K(\cdot)$
$f_n(i,h)$
Memory
$f_{n-1}(i+1,h)$
Line Memory
$f_{n-1}(i-1,h)$
med
$\phi_n(i,h)$
Spatial LPF
$[\alpha_{p,q}'s]$
$m_n(i,h)$

FIG 9

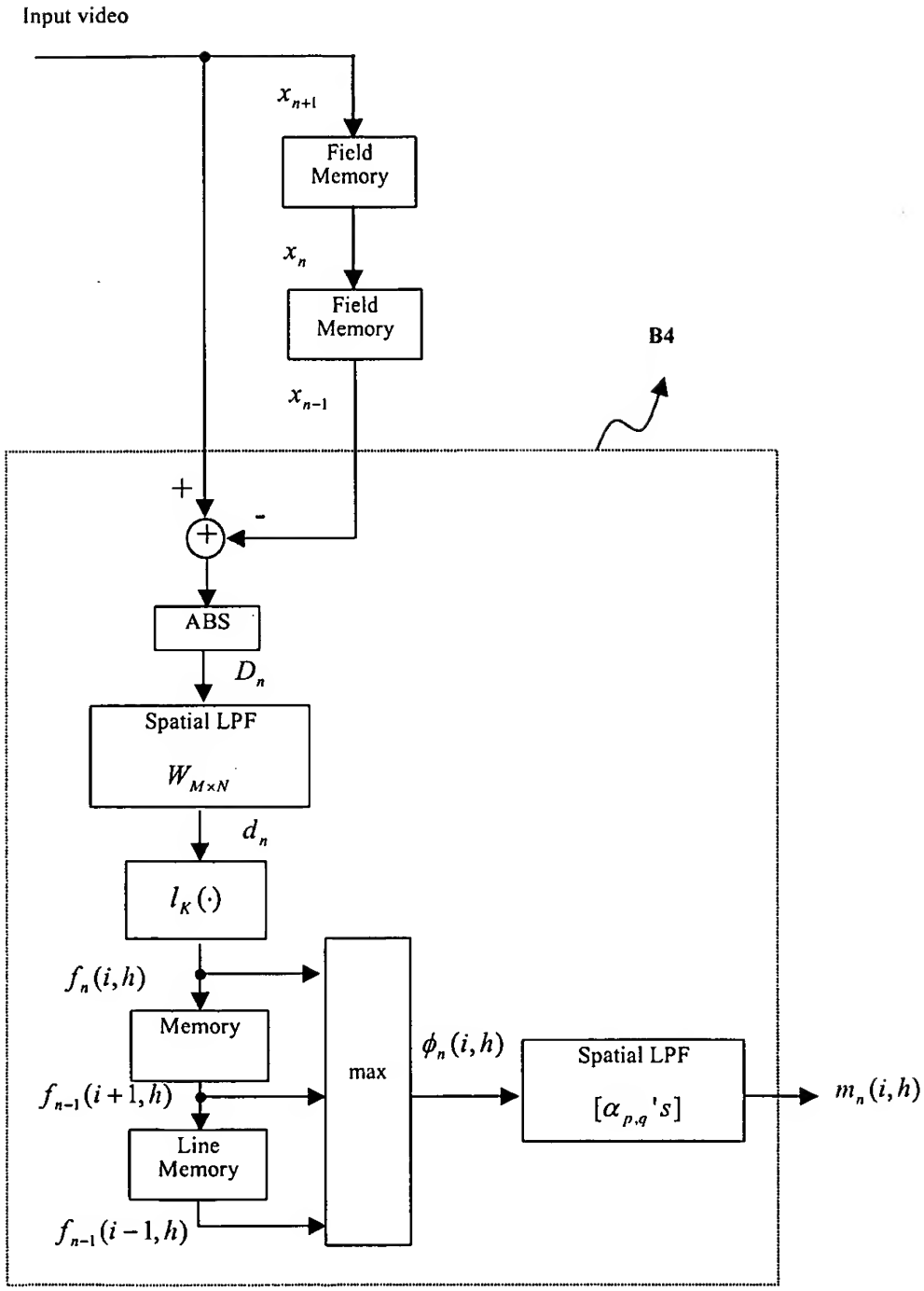

Input video
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
B4
+
-
ABS
D_n
Spatial LPF
$W_{M\times N}$
d_n
$l_K(\cdot)$
$f_n(i,h)$
Memory
$f_{n-1}(i+1,h)$
Line Memory
$f_{n-1}(i-1,h)$
max
$\phi_n(i,h)$
Spatial LPF
$[\alpha_{p,q}$'s$]$
$m_n(i,h)$

FIG 10

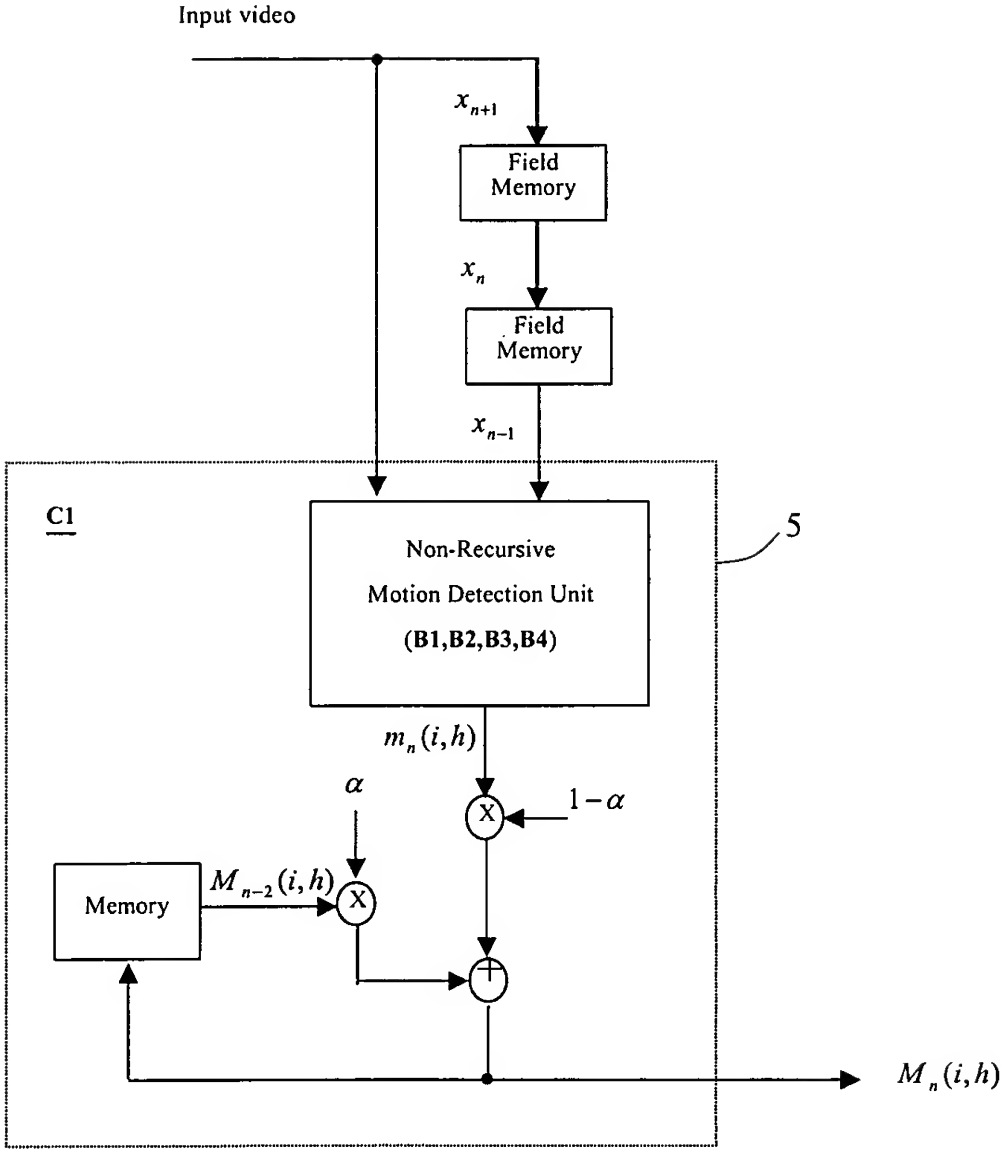

Input video
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
C1
Non-Recursive
Motion Detection Unit
(B1,B2,B3,B4)
5
$m_n(i,h)$
α
$1-\alpha$
X
Memory
$M_{n-2}(i,h)$
X
+
$M_n(i,h)$

FIG 11

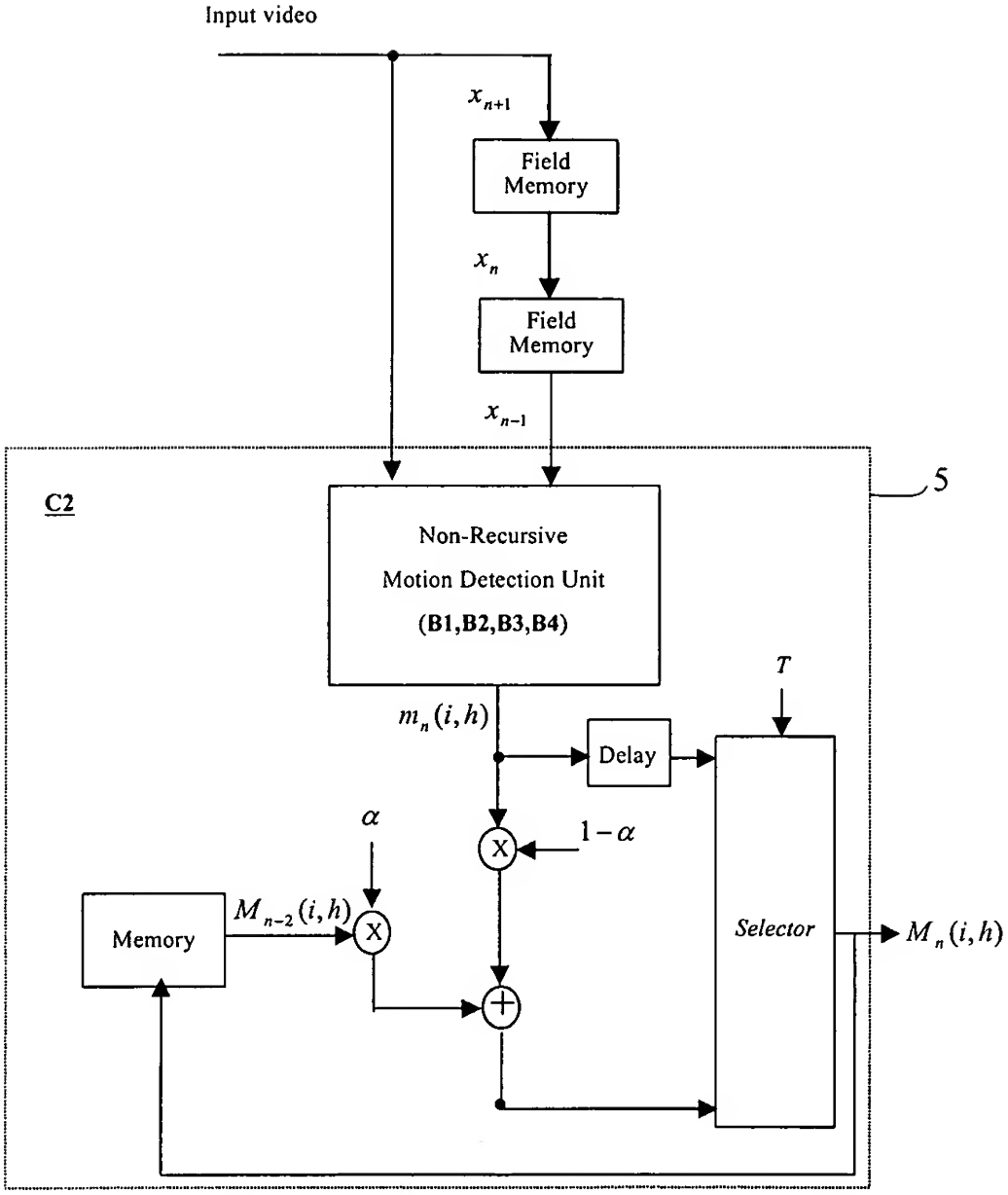

Input video
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
C2
5
Non-Recursive
Motion Detection Unit
(B1,B2,B3,B4)
$m_n(i,h)$
Delay
T
α
$1-\alpha$
X
Memory
$M_{n-2}(i,h)$
X
Selector
$M_n(i,h)$

FIG 12

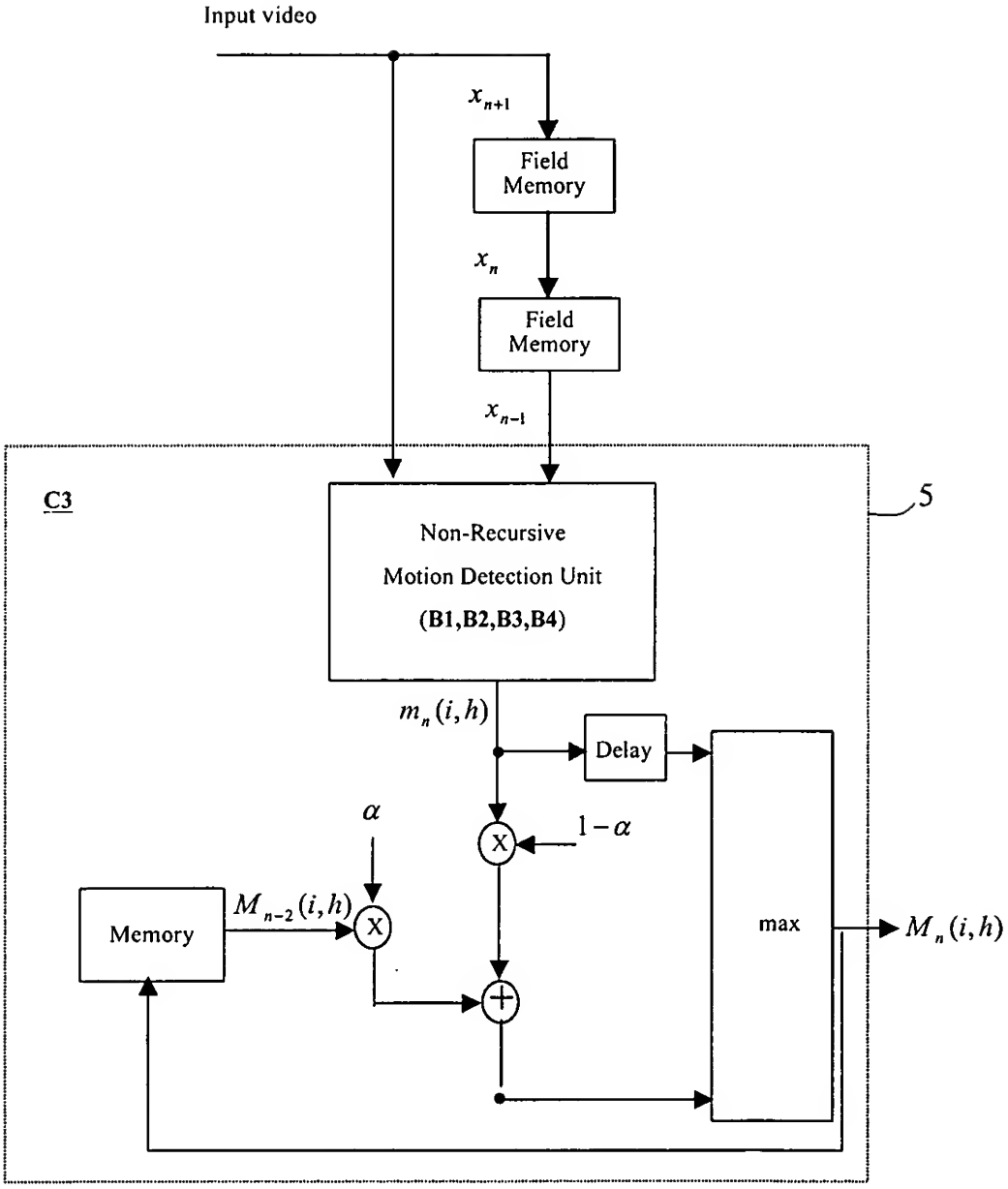

Input video
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
C3
5
Non-Recursive
Motion Detection Unit
(B1,B2,B3,B4)
$m_n(i,h)$
Delay
α
$1-\alpha$
X
Memory
$M_{n-2}(i,h)$
X
max
$M_n(i,h)$

FIG 13

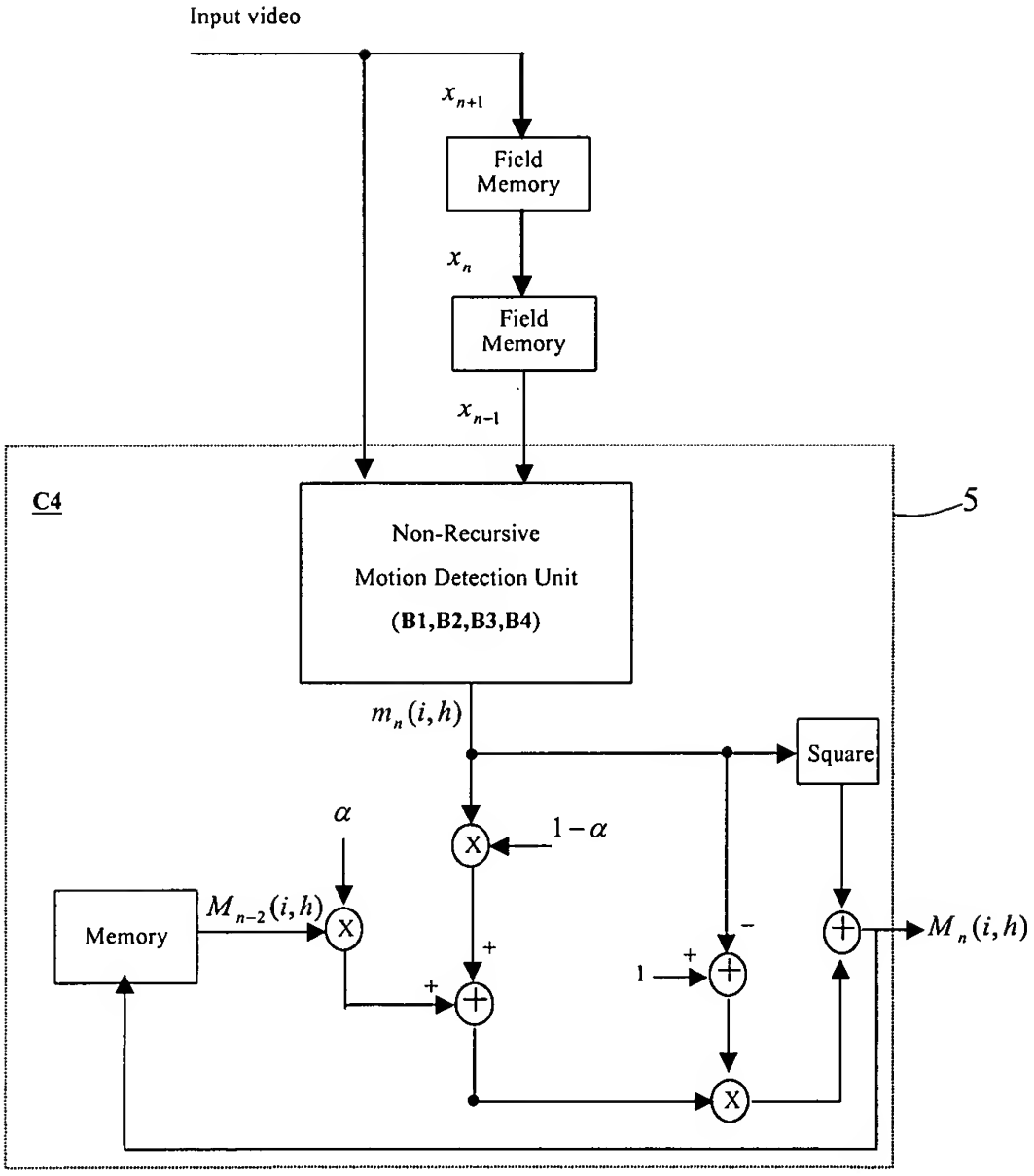

Input video
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
C4
5
Non-Recursive
Motion Detection Unit
(B1,B2,B3,B4)
$m_n(i,h)$
Square
α
$1-\alpha$
Memory
$M_{n-2}(i,h)$
$M_n(i,h)$
1

FIG 14

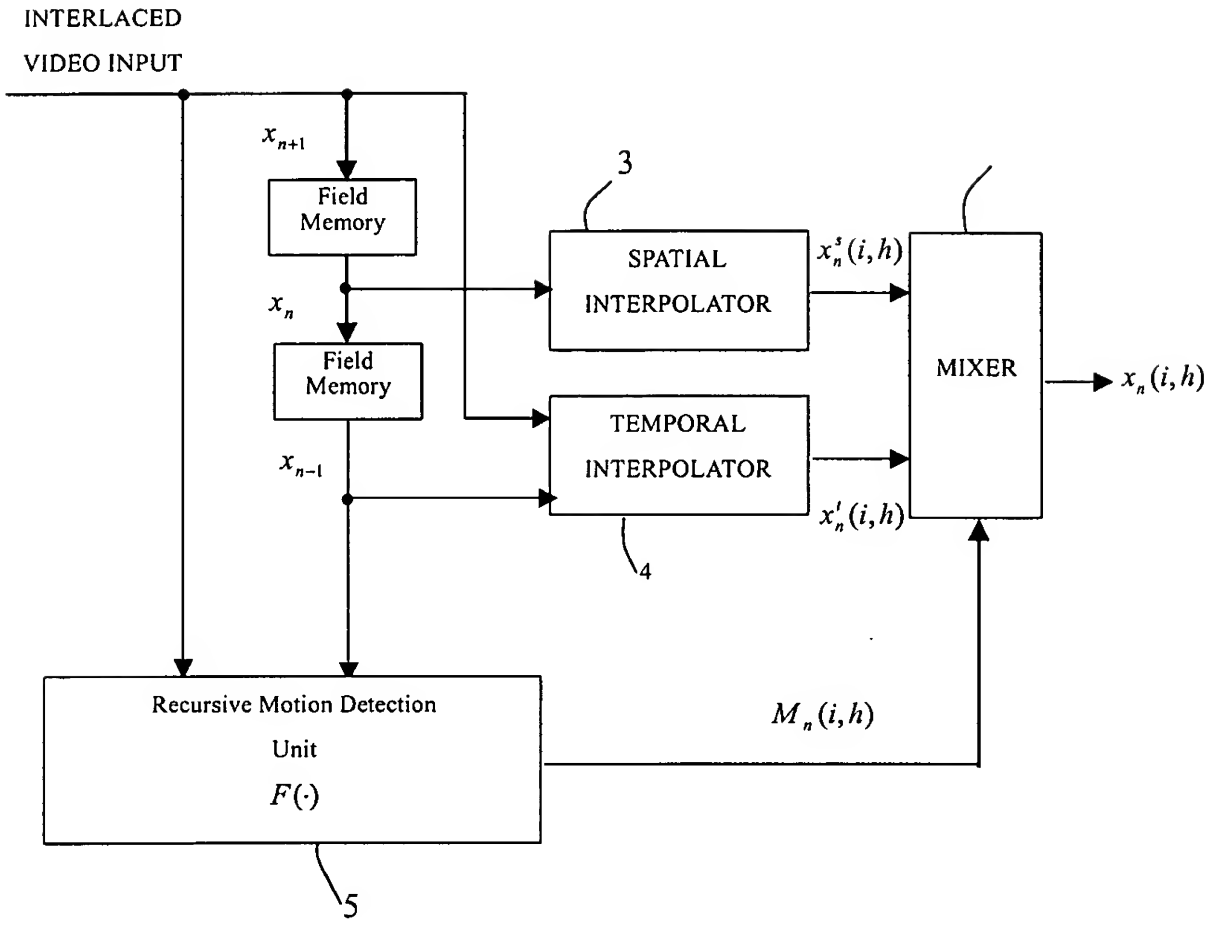
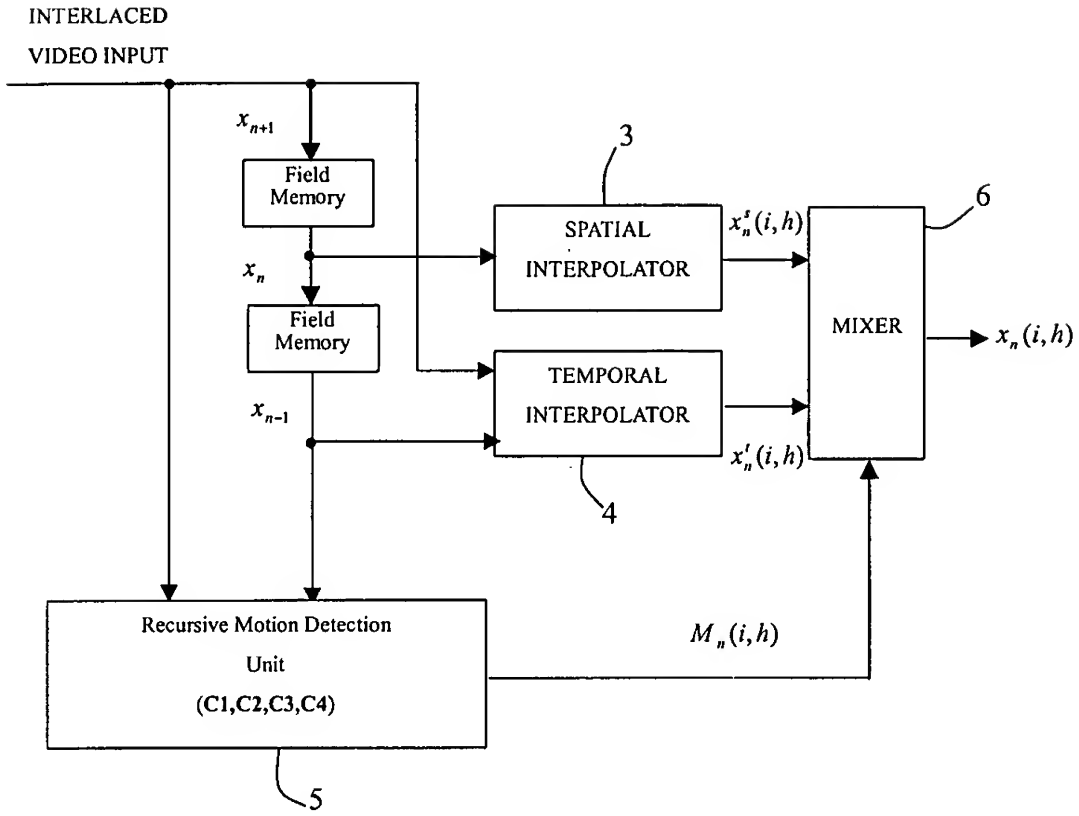

INTERLACED
VIDEO INPUT
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
3
SPATIAL INTERPOLATOR
$x_n^s(i,h)$
TEMPORAL INTERPOLATOR
$x_n^t(i,h)$
4
MIXER
$x_n(i,h)$
Recursive Motion Detection Unit
$F(\cdot)$
5
$M_n(i,h)$

FIG 15


INTERLACED
VIDEO INPUT
x_{n+1}
Field Memory
x_n
Field Memory
x_{n-1}
3
SPATIAL INTERPOLATOR
$x_n^s(i,h)$
TEMPORAL INTERPOLATOR
$x_n^t(i,h)$
4
6
MIXER
$x_n(i,h)$
Recursive Motion Detection Unit
(C1,C2,C3,C4)
$M_n(i,h)$
5